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ABSTRACTS OF PAPERS[1]

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Science in the Back Paddock: The Politics and Economics of Animal Health in Australia

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For many years it was claimed that "Australia rides upon the sheep's back," a recognition of the importance of wool in the economic development of Australia. This truism can be extended to include agricultural production more generally. Although there are now a number of solid studies of the successes of scientific and technological researches in Australian agriculture, to date little work has been done to uncover the political and economic aspects of this major feature of Australian science. A notable exception to this is Boris Schedvin's study of the Council for Scientific and Industrial Research (C.S.I.R.O.). In this paper I seek to extend the process of historical investigation into the role of animal health research within C.S.I.R.O. in the period 1920–1937, concentrating on the political and economic situations in which particular decisions were taken to increase or modify research. I examine the role of such organizations as the Empire Marketing Board (E.M.B.), based in London, and local organizations such as the industry-funded Australian Dairy Cattle Research Association and the Australian Pastoral Research Fund in shaping both the research priorities and the form of research undertaken. Australia's strong imperial links often brought about tensions within C.S.I.R.O., where animal research was in part funded through the E.M.B. with the clear recognition that such research was to benefit the British Empire generally rather than Australia in particular. Although the research upon which this paper is based is at an early stage, some tentative conclusions can already be suggested, the chief of which being that in the period under discussion, research in animal health was not always to the advantage of Australia itself. Of more general interest, I seek to situate the study of scientific endeavor as it relates to animal health research in Australia within the growing literature of "colonial science."

Missionaries and the Natural History of the Hawaiian Islands

E. ALISON KAY[3]

Charles Darwin's comment to Joseph Dalton Hooker in 1850, "... of all places in the world I would like to see a good flora of the Sandwich islands," suggests that neither Darwin nor other naturalists realized that the missionaries of the American Board of Commissioners of Foreign Missions, who had arrived in Hawai'i in 1820, might offer a source of information on the natural history of the

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Islands. Darwin's challenge was unnecessary: the missionaries were themselves "collectors." Thirty of the pioneer missionaries recorded observations under 94 published titles; 170 articles were penned by 24 of their sons. The publications on volcanoes, botany, land snails, birds, climate, and geology are in scientific journals and national and local media. Of 700 annotated bibliographic records on Hawaiian volcanoes, 1826–1916, 25% are those of missionaries. Reverend Titus Coan "observed nearly every eruption of Mauna Loa and Kilauea between 1835 and 1882"; Sarah Joiner Lyman's Earthquake Diary, 1833–1885, recorded earthquakes felt in Hilo. The 80 pioneer missionaries were well educated. Thirty percent of the mission fathers were educated at institutions recognized for science. Both men and women had an inherent love of nature associated with the natural theology embraced by Congregationalists. Their New England heritage was sustained by letters to family and former teachers; and specimens of corals, shells, and lava were sent "home" for identification. Professor Silliman at Yale printed the letters in the *American Journal of Science.* Visiting naturalists were welcomed in the homes of the mission families. The children were sent back to New England for their education until 1841, when a mission school, Punahou, was founded. Natural history was a major interest for the children, the boys especially catching "the land shell fever," and collecting thousands of tree snails. Mainland college records indicate that the Hawaiian education exceeded all expectation: the missionary children graduated with honors as salutatorians and valedictorians of their classes, and became chemists, meteorologists, surveyors, and teachers. Darwin's collectors and the missionaries were all strangers in a strange land. The missionaries had the advantage of being in the Islands for long periods of time, seeing the volcano on a daily basis, and studying "our ferns in their localities and seasons." The 50-year records of volcanic activity by Titus Coan and Sarah Lyman serve modern volcanologists well today. Other observations are yardsticks, providing measures of change in landscape and biota. The missionary observers described things as they saw them: Titus Coan of the first generation saw liquid lava simply as flowing downhill; a geologist had to propose an internal force and fissures opening to the fires below. The missionary evolutionist J. T. Gulick of the second generation, recognizing a hundred species of landshells, each in its own valley on O'ahu, proposed isolation as a major factor in the origin of species and met with Darwin at Down House to discuss his ideas. Together, the two generations provide a remarkable compilation of nearly 100 years of observation and theory of the natural history of the most isolated islands in the world.

Two Kyoto Chemists Divided in Two Koreas

SANG-YONG SONG[4]

Ree Tae Kyue and Li Sung Ki were the first Korean chemists who became professors at Kyoto Imperial University before 1945. They returned home after the liberation of Korea from Japan. In the course of the division of Korea, they chose different sides. Their lives and works are compared in the political background of Korea.

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German Scientists in Russian America

W. Conner Sorensen[5]

Beginning with Georg Wilhelm Steller, who reported the scientific findings of Vitus Bering's discovery of Alaska (1741), German scientists played a dominant role in the scientific exploration of Russian America. This tradition reached its zenith with the work of Adam Johann Krusenstern, a Baltic German who commanded the first Russian circumnavigation (1803–1806) and who organized over 30 Russian voyages to Alaska. Krusenstern recruited Baltic Germans as naturalists on Russian voyages (e.g., Georg Heirich von Langsdorff, Louis Addelbert von Chamisso, Johann Homer, and Johann Eschscholz) and as sea commanders and administrators who combined scientific investigation with their administrative duties (e.g., Otto von Kotzebue, Feodor Lutke, Ferdinand Petrovitch Wrangell, Liontii Hagemeister, and F. V. Bellinghausen). Much of the scientific information about Alaska in the Russian period came from those associated directly with Krusenstern and his students.

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